

A SYSTEMS APPROACH TO FIRM STRATEGY  
AND PUBLIC POLICY\*

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"Systems analysis" is very much in vogue at the present time in several academic disciplines. What is meant by this term varies widely, however; it may refer to a computerized model that attempts to include a broad spectrum of interactions with a dynamic orientation, it may refer largely to a way of viewing phenomena that is more encompassing and that recognizes the many interrelationships that exist, or it may refer to the examination of other types of interrelated systemic phenomena. Thus, while systems analysis often refers to a more dynamic and encompassing approach, that is often the only similarity between different efforts that use the label.

In this paper, I will examine systems analysis as a way of thinking. I have found the Weltanschauung provided by systems analysis highly useful in addressing both firm strategy and public policy issues. I use it heavily in my courses, in defining relevant research issues, and in working with business organizations. Yet, I find it a topic that is easier to communicate indirectly than directly. Like the difference between a selling orientation

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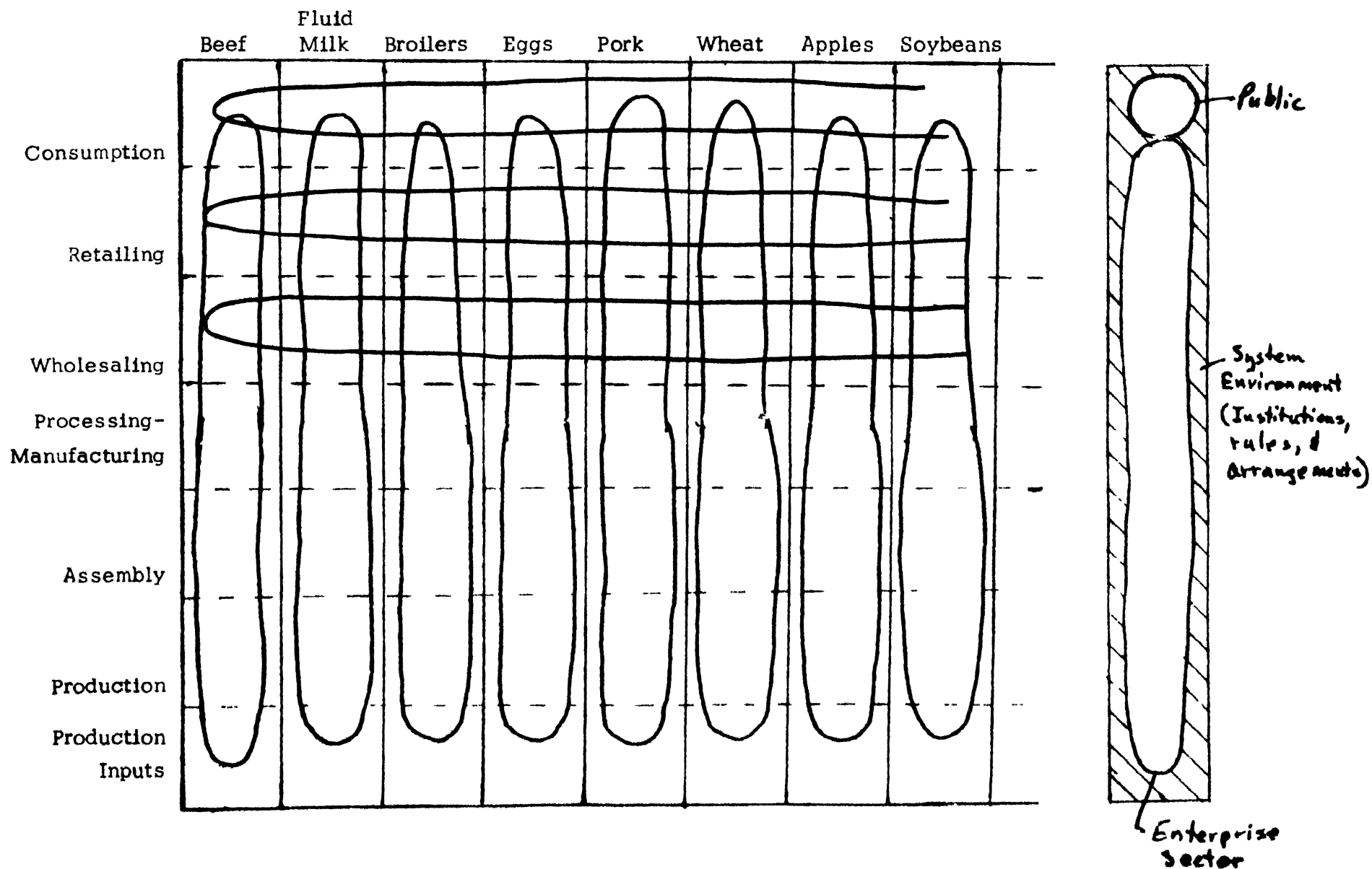
and a marketing orientation, a systems perspective differs from the perspective of most agricultural economists in very subtle, but critical, ways.

As I will use the term, systems analysis is synonymous with vertical system analysis, sub-sector analysis and channel analysis. Ie., I am using the term to refer to vertical relationships and networks. Horizontal or market relationships are considered, but within the broader perspective of the overall vertical system. And, while short-run, individual firm behavior is not completely ignored, the emphasis is clearly on inter-firm relationships and on the organization and coordination of the vertical system--over time. The organization, coordination and evolution of vertical systems is of central concern, whether viewed from the standpoint of firm managers or policy makers.

With this as a preamble, let me attempt to "flesh out" what I mean by a systems approach--first by indicating the benefits to firm managers or students of agribusiness management, and then by indicating the applications to public policy deliberations.

I find it useful to view the food and fiber economy as a large matrix. As Figure 1 suggests, this matrix is made up of several vertical commodity systems. These systems vary considerably in the stages and functions involved. However, they all represent a vertical value adding process resulting from the integration of inputs and functions. The end result in all cases must satisfy some market. That, in the final analysis, is the *raison d'être* for the existence of each vertical commodity system.

Figure 2. Conceptual Model of the Food and Fiber Economy



A major component of vertical commodity systems is the firms involved. These firms are interrelated both horizontally and vertically; horizontally with their competitors at each stage in the system, and vertically with customers and suppliers. Yet, we also recognize that the member firms, which constitute the enterprise sector for a vertical system, are embedded in an environment of institutions and arrangements that have an important bearing on the performance of the system.

Now this may seem rather obvious. However, I've found that most firm managers and academicians do not carry a systems perspective. I have become convinced that there are substantial benefits to be gained by those firms and individuals who are successful in adopting a vertical systems orientation. Further, the vertical systems in total will benefit. Some of the reasons for this conclusion follow.

- (1) A systems perspective encourages firm managers to recognize the overall purposes of the system of which they are a part.

The orientation and thrust of the system can be compared with their own goals and competitive emphasis. Are they compatible? Is it going to be in their best interests to continue to be a part of a particular vertical system? What are the opportunities for re-orienting or reorganizing a system so that it is compatible with the interests of member firms and future market expectations?

The development of private label vertical systems is illustrative of the new systems that have been developed to satisfy the

competitive needs and orientation of large retail food chains and small processor-manufacturers. The competitive strengths of large retail chains lie in pre-retailing functions; in efficiently organizing and coordinating procurement, warehousing and physical distribution. This is consistent with their competitive thrust at retail, which tends to emphasize economy--low prices. Vertical systems that emphasize national brands and new product development may be efficient--but this is not generally their primary orientation. Kellogg's Corn Flakes, Cheerios and Rice Krispies are sold--not on the basis of their economy or price appeal--but because of their "go power," their tastiness, or their "snap, crackle and pop." There are relatively few chances for retail chains to use their pre-retailing skills to gain competitive advantages in these cases.

Thus, retail chains have developed a large number of private label vertical systems--where the emphasis is on efficiency and economy--and where their volume and pre-retailing skills give them definite competitive advantages.

As chains have placed more emphasis on private label merchandise, the manufacturers of national brands have found that they have more in common with small chains and independent retailers. Thus, vertical systems including these entities have emerged with the emphasis on national brands and product innovation<sup>[13]</sup>. As Figure 2 indicates, the two parallel systems

are not separate and distinct. In fact, there is considerable overlap. Large chains handle national brands, and independents and small chains carry private label merchandise. However, while the largest 20 chains captured 40 percent of all grocery store sales in 1970, their share of private label sales was likely 65 to 75 percent.<sup>1</sup> Obviously, this means that independents and small chains sold a disproportionate share of national brands. Thus, although the two systems are not distinct, they do reflect the relationships and allegiances that have been emphasized as firms have sought vertical systems that are compatible with their interests.

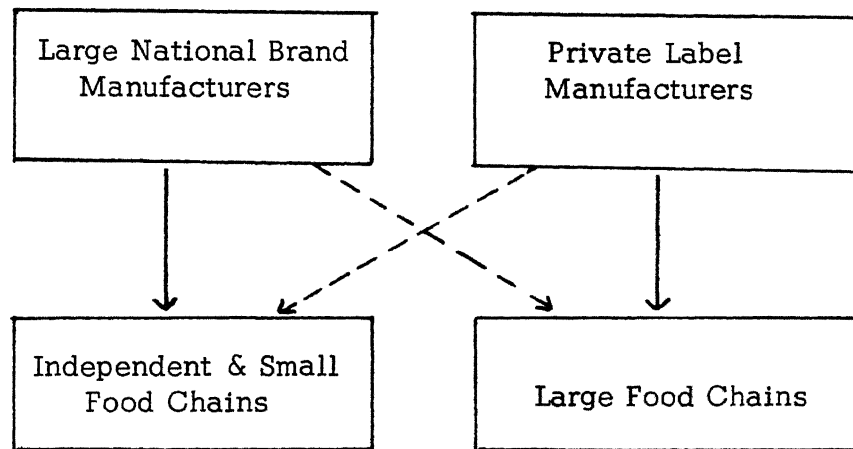


Figure 2. Manufacturer-Distributor Patterns that Have Emerged in U.S. Food Marketing

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<sup>1</sup>This is a guestimate by the author based upon data in [7], [13], and [20].

- (2) A vertical systems orientation encourages recognition of the mutuality of interests of member firms, a longer range orientation, and recognition of the influence of institutions and market rules.
- This tends to encourage cooperation between firms in the system and to reduce dysfunctional conflict. Let me be clear, however. I'm suggesting this will reduce dysfunctional conflict, not conflict altogether. A systems orientation will not provide a state of blissful cooperation and harmony. It can, however, tilt the balance of cooperation and conflict in a vertical system in favor of cooperation. Both elements (conflict and cooperation) are naturally present in vertical systems; both are necessary and useful [25]. The real question is the desired balance. In my opinion, the performance of most vertical systems and the welfare of member firms would be enhanced by an increase in cooperation. In bargaining relationships, this means more emphasis on "gain" bargaining, and less on "pain" bargaining.

The use of contracts and joint ventures of the type discussed by Ray Goldberg in his recent article<sup>[12]</sup> can enhance cooperation. Used to make farmers or their organizations more integral members of vertical systems, these coordinating devices can encourage a "partnership" rather than an adversary relationship between marketing firms and farmers. When this happens, the total system often benefits; further, the producers involved are encouraged to be

more market oriented, and are less likely to turn to increased government involvement to resolve their problems. Of course, this is true only if the marketing firms involved are systems oriented and operate to enhance the welfare of the system and its members in the long run.

I'm not suggesting, however, that member firms of a vertical system are going to sacrifice their interests at the altar of system cooperation and welfare. Realistically, we can neither expect nor hope that this will happen to any great extent. We can hope for some submerging of minor short-run interests, however, in favor of the longer run welfare of the system.

- (3) A systems orientation helps firms adopt a posture and strategy that is consistent with the characteristics and trends of the system. The point is probably most obvious when a branded manufacturer enters a commodity system where there is little, if any, product differentiation, and depends for success upon establishing branded products with higher profit margins. The results are often unspectacular--unless in a negative sense.

Products such as fresh broilers, eggs, red meat, flour, sugar, and fluid milk come to mind. Gaining a consumer franchise for a brand of these products is possible. However, the percentage of successes suggest that such endeavors are clearly high risk in nature. The payoff may be greater by choosing one of two other alternatives:



- (a) Differentiate the firm as a supplier to distributors. This may be accomplished by providing products in a form, quality and uniformity that distributors prefer, or by providing one or more of a wide variety of services, such as merchandising assistance, space allocation, special deliveries, product movement and profitability data, free display fixtures, etc.
- (b) Decide to specialize in "cordwood." Concentrate on developing a tightly coordinated, streamlined, efficient system that will allow survival and success even when competition is strictly on the basis of price.

Holly Farms (division of the Federal Company) is an outstanding example of the former. Their success with "chill-pack" broilers can be attributed to what their product did for retailers--not for consumers. By choosing to package broilers under distributors' labels rather than their own, they avoided this source of retailer resistance. However, their product effectively differentiated Holly Farms as a supplier since it removed the cutting and packaging tasks and attendant sanitation problems from retail stores<sup>[16]</sup>.

Other broiler integrators have chosen to concentrate on efficient, tightly coordinated vertical complexes without product or enterprise differentiation. Some regional integrators have been noticeably successful with this approach, and have been able to

out-last several national organizations in the mercurial broiler business. By specializing in broilers and avoiding some of the diseconomies of large organizations, the well-managed regionals are estimated to have a one-half to one cent per pound cost advantage over the large nationals. Considering that integrator profit margins average about one-fourth cent a pound, this represents a substantial cost advantage<sup>[16]</sup>.

Ralston Purina, the largest of the nationals in the broiler business, finally decided they could not live with the fickle fate of the commodity markets and sold off their broiler and egg complexes in 1972. Ironically, this decision occurred just as Purina was about to launch a major effort to establish their checkerboard brand on a variety of fresh and frozen broiler products. It would have been interesting to have observed their degree of success. I suspect they might have achieved moderate success in branding pre-cooked frozen products, but would have been surprised if they had been successful in branding fresh broilers on a broad scale. In large part, broilers are still pretty much "cordwood" in nature. Processor brands have been difficult to establish.<sup>2</sup>

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<sup>2</sup>Notable exceptions include Foster Farms in San Francisco and Perdue Foods in New York City, both of whom have successfully established brands of fresh broilers using wing tags, extensive promotions, and careful quality control. More recently, Tyson Foods and Purnell Farms have successfully penetrated the Denver and Memphis markets with processor branded chill-packs (pre-packaged at processing plant).

If we swing our attention to the flour milling industry and the vertical system of which it's a part, we find a system where logistics, efficiency and risk management are the critical ingredients. Brands--while they exist--command little in the way of customer preference or price premiums. Bay State Milling Company has been notably successful in this mature industry by concentrating on flour milling and developing a business that is consistent with the characteristics of the system. Because of slowly changing milling technology, old mills are nearly as efficient as new mills. And, since the flour industry lacks either growth or profitability appeals, many mills have changed hands during the last decade. Bay State has capitalized on this situation by purchasing well-located, older mills on a depreciation of assets basis. By selecting mills that are near consumption areas, they are able to gain a freight rate advantage (unit train rule), while at the same time providing custom blending and special services to bakeries.

Management of their risk exposure is also a key ingredient to success. Since millers typically operate with 120-day forward contracts with bakeries, their price risk needs to be offset through some combination of grain inventories, grain purchase contracts and use of the futures market.

Bay State's strategy is but one of the alternatives for milling companies. As in most vertical systems, there is room for many types of firms with different emphases--as long as their thrust is consistent with the changing nature of market needs and the vertical system. General Mills, for example, like many large diversified food companies, chose to move away from the commodity oriented wholesale flour business. They retained only those mills whose output they could sell through branded consumer products such as cake mixes.

Some similar trends are apparent in the fluid milk and red meat vertical systems. In the fluid milk system, processors find themselves facing market orders and large, well-organized cooperatives on the procurement side, and large, economy-oriented and private label preferring buyers on the selling side. The number of large, retail chains that have integrated into fluid milk processing has increased rapidly during the last decade; in 1969, these firms processed 11.4 percent of all fluid milk products<sup>[7]</sup>. Many other retail organizations select milk suppliers on a bid basis. The emphasis is very clearly on price, with profits unattractive. The large national dairy processors are tending to withdraw from this price-oriented ballgame--placing emphasis instead on processed dairy products where processor brands are stronger, and on other methods of diversification. I think it's entirely likely that dairy cooperatives may, in time, find it in their members' interests to either process fluid milk themselves, or

to enter into joint ventures with dairy processing companies or corporate chains to process milk.

In the red meat vertical systems, the large national packers have witnessed a significant reorganization of these systems and may never again play a dominant role in fresh meat. The development and rapid growth of specialized slaughter houses in production areas has significantly reduced the role of national packers in marketing fresh meat. This development was consistent with the trend among retailers toward central warehousing and breaking of beef, which reduced the importance of packer store delivery service. The opportunity to obtain carload lots of uniform quality beef from the specialized packers at lower prices swung many retail buyers away from the traditional system to the new, more compact system.

The national packers have continued to shift their emphasis toward branded processed meat products, toward other non-food products, and away from the price-oriented commodity markets that characterize fresh meats. Note that in this case (as is frequently true), the major restructuring of the meat system was not the handiwork of the major established firms; nor was it the result of clairvoyant government agencies. Relatively small, innovative mavericks triggered this reorganization. It might not have occurred if entry into the vertical system had been precluded by the dominance of a few firms.

A systems perspective is useful in anticipating such changes since it focuses attention on change forces that are operating throughout a system. Changes in beef production, in retailing, and in the regulations affecting packing plants (Wholesome Meat Act) had sufficiently altered the vertical beef system that a reorganization of slaughtering was inevitable.

The posture that a firm adopts should be consistent with its own strengths and weaknesses. Thus, while many commodity marketing cooperatives would like to enjoy the fruits of marketing an established brand, accomplishing this from scratch is a major undertaking in most cases. It calls for quantities of capital and marketing expertise that most cooperatives do not have--at least at this point in time. (There are several noteworthy exceptions, such as Land-O-Lakes, Diamond Walnut Growers, Ocean Spray, Sunsweet Growers, Sunkist, and National Grape Co-Op.) Thus, given the alternatives of joining a private label--economy and efficiency oriented--system, or a system emphasizing national brands and product innovations, most cooperatives are better equipped to successfully compete in the former. Note that in many of the instances where cooperatives have successfully established national brands, they control a large portion of the commodity produced.

These are probably a sufficient number of examples to illustrate the value of a systems orientation in defining firm strategy. I find there are tremendous benefits in comparing the characteristics and evolution of different vertical systems, just as there are real benefits in comparing economic or political systems, or in studying comparative religions. It helps to place ones own experience in perspective.

- (4) A vertical systems perspective may be necessary for unplanned systems to compete with planned vertical systems, or with systems in other countries. As retail restaurant and motel chains have grown in strength, "planned" vertical systems have taken on greater importance. By "planned" systems, I'm referring to those systems in which a single organization largely controls a <sup>closely coordinated</sup> vertical array of establishments through ownership, contracts, market power, government edict, or some combination. The vertical broiler complex that Kentucky Fried Chicken controls, for example, is tied together by a combination of ownership and contracts.

The planned systems that serve Holiday Inn, Kentucky Fried Chicken, Safeway, United Airlines and others often develop because cost reduction or product control benefits are perceived from compact, tightly coordinated, centrally controlled systems. Dysfunctional conflict is reduced. Planning is improved. Uncertainties decline.

Unplanned systems may not have to compete "head-on" with planned systems; they may choose instead to parallel planned systems and emphasize alternative performance characteristics. Increasingly, however, unplanned systems must make that choice as the impact of planned systems spreads.

Regardless of their choice, the common interests of members of unplanned systems must receive greater recognition to enhance cooperation and coordination. In many cases, this calls for some member of the system to exercise system leadership. The most logical candidate is generally either a large manufacturer or distributor.

To remain viable, all vertical systems must maintain a balance between two key dynamic dimensions--coordination and adaptation. Coordination involves synchronization, cooperation, routinization--things embodied in a smooth running, stable system. Adaptation often involves the opposite; reorganization, conflict and instability. Coordination allows a system to survive over short and intermediate periods. Adaptation keeps the system relevant for the long run. The needed balance between these two dimensions is directly related to the rate of change in the vertical systems.

Planned vertical systems would appear to have a definite advantage in coordination<sup>[19]</sup>. However, the nature of planned systems may make them less adaptable. Since the emphasis is on synchronizing, routinizing and streamlining, these systems can



become highly structured and inflexible in nature. The significant investment the system controller has in a planned system will often act as an additional deterrent to adaptability. Thus, if the coordination of unplanned systems is sufficient to allow them to compete in the short run, they may experience some advantages in greater adaptability in the long run.

- (5) Finally, a systems orientation helps one understand the distribution of authority and the points of power and control in a vertical system. If coordination and adaptation are key dimensions, who has the greatest influence over these dimensions? What firms are in the most strategic position to effect change in the system? How is authority distributed throughout the system? How is risk distributed? These are points worth knowing.

To this point, I've concentrated attention on the importance of vertical relationships and a vertical systems perspective. I would be remiss, however, if I did not recognize the increasing difficulty of defining such systems along commodity lines, or by the firms involved.

For example, manufactured and prepared foods--which have grown in importance--frequently represent a combination of several commodities. Similarly, marketing firms that confine their activities to one commodity or even several closely related commodities are rapidly declining in number. For example, only 20 to 30 percent

of the sales of some of the national "dairy" processors in the U.S. now come from dairy products. These factors, if anything, increase the importance of a systems orientation. However, they do make it more difficult to define the establishments, products and market rules that are part of a system.

The foregoing indicates some of the advantages of a systems approach in developing firm strategy. Courses taught with this orientation can provide students with an extremely valuable shift in focus. Most agricultural economics courses with a management emphasis concentrate on intra-firm management decisions. Production economics, finance, managerial marketing and farm management all tend to deal with rather specific intra-firm decisions.

Commodity marketing courses can provide a systems perspective of a specific commodity system. However, these frequently become so engrossed with the intricacies of a particular commodity that a longer run, comparative perspective is never developed. A course that uses a systems approach to examine the problems of many different types of firms in several commodity systems can help students develop a way of thinking that continually places specific problems into a broader strategy perspective.<sup>3</sup>

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<sup>3</sup>The course at Ohio State that the author teaches on strategy in agribusiness employs 12 to 14 case studies of agribusiness firms. These are selected to expose students to problems ranging from enterprise differentiation to government/business relations, and from commodities such as eggs, flour and beef to farm machinery and fertilizer. The course is patterned after the agribusiness courses at the Harvard Business School and draws heavily on Harvard case studies. While the "hop-scotch" approach and long run strategy orientation is initially somewhat unsettling for many students, as the quarter progresses, they become very enthusiastic about the power of this new way of thinking.

### A Systems Approach to Public Policy

A systems perspective is also useful in addressing public policy questions from a broader, more encompassing point of view. While this point is probably more obvious than the benefits to firm managers, a few comments are in order.

The perspective held by those concerned with public policy--the way they see the world--is of particular importance. Some will see the food system largely through the eyes of one segment, such as producers or consumers. Hopefully, an increasing number will embrace a systems perspective and recognize the interdependent and interacting characteristics of the food and fiber economy. A systems approach is just as important, if not more so, for policy makers as for managers of agribusiness firms. By keeping in focus the overall purpose of a vertical system, a systems approach encourages market oriented public policy which can benefit the entire system and its various members. Public policies in Canada, for example, that consider both domestic and international markets should be a catalyst--or at least not an impediment--to market expansion by food manufacturers and processors<sup>[1,2,9]</sup>. This, in turn, can increase the demand for agricultural commodities produced in Canada. Thus, the mutual interests of manufacturers and producers are emphasized.

The importance of considering the total system has been convincingly demonstrated by some of the experiences in less developed countries. For example, development efforts in India that concentrated heavily on increasing

grain production resulted in their import oriented grain marketing system being out of phase with the needs of the country as success was achieved in increasing domestic production. The lack of adequate storage and transportation facilities to store and move grain from the producing areas of India has been a major problem facing the agricultural economy. Such "oversights" are less likely to occur if those involved carry a systems orientation.

Unfortunately, many U.S. economists working with developing nations concentrate their attention on public policies to stimulate increased farm production. Inadequate attention is given to the remainder of the vertical commodity systems in the country and to efforts to develop all stages of the system in balance. Such a limited perspective makes it very easy to ignore the role and potential contributions of business firms to the development process. For example, the establishment of modern farm supply and food processing or assembly firms in an area can act as an effective catalyst to increased farm production. Since the success of these firms is often dependent upon the development of agricultural production, they may extend credit and technical assistance, enter into forward contracts for commodities, and provide other incentives to the producers in an area. While there may also be some undesirable consequences from the establishment of such firms, at the very least, policy makers should consider this alternative along with farm oriented policies such as price supports, an improved farm credit program, increased research and extension, etc. A systems perspective encourages considering

the effect of any policy on all members of the system, and may help identify the points of leverage where government action will have the greatest effect on the development and transformation of the total system.

A systems perspective tends to focus more attention on the rules and institutions that influence the performance of the system, and also on inter-firm linkages and relationships. Many of our existing statutes are primarily concerned about horizontal or competitive relationships. The vertical relationships between firms can also have a significant effect on industry and system performance. In his recent book, Gordon Bloom contends that the greatest opportunities for increased efficiency in the food industry lie in inter-firm relations--particularly as these affect coordination and cooperation in the vertical system<sup>[5]</sup>. There is some persuasive evidence to support Bloom's position in spite of the lack of attention by academicians to this dimension of our market sectors. Much attention has been focused on increasing intra-firm efficiency. At this point in time, changes in the organization and coordination of vertical systems may well represent the major opportunities for increased productivity.

The food industry in the U.S., for example, is on the verge of adopting an electronic check-out system that is linked to a computer and provides a greatly improved system of ordering, inventory control, profit management, etc. For such a system to be adopted on a wide scale, however, uniform product codes and a standardized code design had to be developed. This task was recently completed. It required cooperation by manufacturers,

wholesalers and retailers--cooperation that in some cases may have been suspect from an anti-trust standpoint. In such cases, the potential benefits from greater system cooperation must be weighed against the dangers of collusion or a decline in competition within particular markets. Where the benefits from system-wide cooperation are substantial, public agencies might consider initiating and participating in meetings involving all members of a system.

Without a systems orientation, one might not detect the parallel systems that are present in several commodity systems (private label vs. national brands). From a performance standpoint, the presence of two competing systems--one emphasizing economy while the other emphasizes product innovations and progressiveness--is critical<sup>[13]</sup>. As long as consumers have alternatives which allow them to choose the performance characteristics they prefer, there is less need for government to adopt the role of consumer protector. A strong, yet well-balanced retailing sector in which both chains and groups of independents are viable competitive factors is important in facilitating adequate consumer alternatives.

A systems view of the U.S. food economy suggests that in many commodity systems the presence of parallel systems allows the two locuses of power--large manufacturers and large retail chains--to operate without head-on confrontations; yet the power of each tends to be kept in check by the alternative system. As long as neither system becomes dominant, this is a desirable situation from a social welfare point of view.

In vertical systems where parallel channels have not emerged, such as eggs, broilers and fresh meat (price oriented channels only), or cereals and canned soup (national brand channels only with emphasis on product differentiation and new product development), the structure of the markets at each stage justifies greater concern. Government's role in adjusting incentives, altering institutions, or changing rules and regulations to influence performance may also be more important in these systems.

In those systems where the nature of the commodity has made branding very difficult (e.g., eggs, fresh meat, broilers, and fluid milk), large distributors tend to be in the best bargaining position. The instability of prices in some of these systems has posed serious hardships on producers and manufacturers. Equity and stability are often the performance factors of central concern.

In those systems where a price oriented system has not developed, bargaining power tends to lie in the hands of national brand manufacturers. Stimulating or maintaining effective competition between manufacturers becomes a central concern both in the procurement of farm produce and in the sale of the manufactured product.

Alternatives are essential for both buyers and sellers--at all levels in a system--if competition is relied upon as the governing force. I sense that the U.S. government has been more active in trying to control the structure of industries than has the Canadian government. Given the size of the U.S. economy, highly concentrated industries are seldom justifiable from a public

welfare standpoint. However, highly atomistic industries also may not be desirable where scale economies or opportunities for product or process innovations are important<sup>[18,23]</sup>. Thus, medium levels of concentration are often preferable.

The location of an industry within a commodity system does have some bearing, however, on the performance effects of high concentration. Where a concentrated industry sells its products to a relatively small number of knowledgeable buyers, the likelihood of monopoly power abuse is considerably less than where a large number of uninformed buyers are involved. Thus, while data are not available, I would expect better performance from the foundation broiler breeding industry (largest four firms represent about 90% of industry sales) where they are selling chicks to companies such as Swift, Central Soya, Pillsbury and Holly Farms, than from a similarly concentrated industry selling consumer products.

This is not to suggest that concentrated industries in certain locations should be ignored by regulatory agencies. However, it does suggest that market structure- performance relationships and system characteristics and dynamics--should both be considered.

### Concluding Comments

The vertical systems approach that I have proposed in this paper is essentially a point of view--a way of looking at various segments of the economic system. It is profound, in a very subtle way, due to the insights it provides



for those concerned with firm strategy or public policy. At this point in time, it lacks the hypothesized relationships necessary to call it a theory; by itself, it suggests little in the way of positive or normative relationships.

Yet, experience in applying a systems perspective in the classroom, in research, or in working with industry or government agencies has convinced me of the merits of this approach. While rather imprecise, it helps one identify some of the critical points that should be considered. Teachers, managers and policy makers are continually in need of new and useful perspectives. A systems approach has considerable potential from this standpoint.

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